Mechanism for Inverting the Chirality of Right-Chiral Pharmaceutical Molecules Post-Manufacture so as to Render Them Bio-Active

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Introduction

One of the great challenges of pharmaceutical chemistry is manufacturing compounds which have what is known as a left-handed chirality. Compounds with a right-handed chirality, despite having the same fundamental composition, are not bio-active. From a manufacturing standpoint, it is much easier to produce right-chiral molecules and it is much harder to produce left-chiral molecules. Although molecules manufactured naturally within the human body are left-chiral, traditional pharmaceutical manufacturing processes have a tendency to produce right-chiral molecules which are entirely useless if they are not bio-active.

Rather than a means of producing a left-chiral molecule from scratch, this document will prescribe a method for taking right-chiral molecules and causing them to invert their chirality post-manufacture without damaging the molecular chain.

Abstract

Provided that the physical position of molecules can be controlled in a flow channel, it should be possible to use an approach based upon employing targeted Coulomb Force Lines in order to induce nuclear spin in a single atom on the end of the molecular chain.

A series of molecules would be moved through the flow channel not lengthwise, but “standing up,” so as to allow for a series of CFL generators to interact with the nucleus of only the final atom on the chain (this could be visualized as a blade of grass brushing against a lawnmower blade barely low enough to make contact with the grass with the CFL effects, of course, being projected from the side.) This requires precision and many attempts and also requires that only the atom on the end of the molecule chain be affected.

As explained in previous publications (ibid.,) the phenomenon of *latent heat* can be explained as the spin of the nucleus of an atom acting as a flywheel of sorts which retains energy which is subsequently released when a vibration is introduced. Heat is used in chemistry to break molecular bonds and to encourage the formation of new bonds. We do not wish to introduce actual heat as this would likely break the molecular chain. Not all materials naturally retain latent heat and most would be likely to quickly expel the heat, however, we can, at least transiently, instill any atom with latent heat using this approach. Chemistry is generally based upon heating whole molecules, not parts of molecules. This proposal is not that heat be introduced to a part of a molecule, but rather, that latent heat i.e. nuclear spin be introduced to only a single atom of the molecule. This has never been previously proposed in chemistry.

Therefore, if we were to use this approach to spin a single nucleus of a single atom like a basketball on one's finger, we would be instilling that atom with latent heat which could then be expected to attempt to move through the molecular chain.

Some of the energy would be converted gradually into standard heat and some of it would be converted into a structured alteration of the spin characteristics of the electrons of that atom. This alteration of spin characteristics could be expected to exert a force on the neighboring atom in the chain, which would, in turn, instill some latent heat in that atom. As this latent heat moves through the chain, much like thread of yarn curling in response to humidity, the chiral molecule, if it were right-chiral to begin with, could be expected to invert to a left-chirality.

The reason why this would be the case is because the induced spin would necessarily be in a consistent direction and this would create a skew in the positional tendency of covalent bonds between atoms which is the inverse of the original tendency and which leverages the extant chiral bias to flip to the opposite-handedness, which is a much less energy-intensive process than it may have been previously understood to be. I predict that; provided that the energy is structured in the proper way (and inducing latent heat to an end-cap atom on a chiral chain would be an example of such properly structured energy;) it should take extremely little energy cause an inversion in molecular chirality. Like an ice cube frictionlessly spinning about at the bottom of a glass in which the center of the glass bottom is slightly raised relative to the part where the bottom meets the sides of the glass, it requires almost no energy for the cube to move about the circumference and it spins counter-clockwise just as readily as it spins clockwise. The energy state of a right versus left-chiral molecule is virtually the same and the transition between the two requires little energy so long as one flips directly from one chirality to another without attempting to straighten the molecule in the process. It's only when one attempts to perch the ice cube upon the peak in the bottom of a glass (or on the back of a spoon, for that matter) when there is apparent difficultly. Chiral chains resist this and large amounts of energy are required in order to straighten-out the chain. Relatively little energy would be required to invert chirality in an established molecule. This possibility has been discounted by chemists, most likely, because they are thinking of the way in which a hair or a coil spring is "trained" in a particular direction and how difficult it is to force them to bend the other way. It is important to bear in mind that we are dealing with chains of individual atoms which have no material surrounding them to counteract an inversion in handedness. The amount of force needed to force the molecule to twist the other way is marginal; we merely need a mechanism for applying that force and this method is ideal for that purpose.

The difficulty of constructing a left-chiral molecule from scratch lies in the difficulty of exerting the right combination of forces to the molecule throughout the entire manufacturing process. Using this approach, we would not have to micro-manage the building of the entire left-chiral chain and could, rather, simply build a right-chiral chain and add latent heat to the atom at the end of the chain in order to trigger an inversion post-manufacture.

Conclusion

If we could produce left-chiral molecules from right-chiral molecules using a physics-based approach such as this, the cost of manufacturing useful bio-active molecules would be greatly reduced.